Tax Technology, Fairness Perception, and Tax Compliance among Individual Taxpayers

Nasira Perveen[1] and Ashfaq Ahmad[2*]

[1]Department of Management Sciences, University of Okara, Pakistan
[2]Hailey College of Commerce, University of the Punjab, Lahore, Pakistan

Abstract

International Center for Tax and Development estimated that majority of the countries collect 80% of total revenue from taxation. However, most of the developing countries including Pakistan face difficulty in taxation compliance. In Pakistan, taxation system faces a major barrier to compliance in terms of trust deficit among citizens regarding tax authorities. The current study attempted to assess the influence of tax technology on taxation compliance and how it helps to formulate fairness perception about the taxation system. It employed Technology Acceptance model (TAM) to extract the variables of the study according to the local setting of Pakistan. The population of the study consisted of individual tax filers including two segments of the society, that is, salaried individuals and self-employed individuals. Snowball sampling technique was used to collect the data by using a self-administered questionnaire. The selected sample generated 169 complete and useable observations/responses. The data was analyzed by Structural Equation Modeling (SEM) through Smart PLS. The findings indicated a significant direct influence of perceived usefulness, perceived ease of use, and facilitating conditions on tax compliance. Moreover, fairness perception showed a significant positive influence on tax compliance, supported by fairness heuristic theory. The perceived tax fairness significantly mediates the association of the perceived ease of use and facilitating conditions with tax compliance. However, this mediation was not found in the relationship between perceived usefulness and tax compliance. This study could help tax administrators to cope with the issue of trust deficit among tax files and state authorities.

Keywords: individual taxpayers, perceived tax fairness, tax compliance, Technology Acceptance (TA) model

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* Corresponding Author: ashfaq.hcc@pu.edu.pk

Introduction

Taxation revenue substantially contributes to state revenue and development around the globe. Taxation patterns have cross country heterogeneity around the world, especially among developing and developed nations (Maqsudi et al., 2021). Developed countries have major tax revenue in the form of direct taxes, while the developing countries heavily rely on indirect taxes including trade and consumption taxes (Dom et al., 2022). A series of research contributed to understand compliance behavior. Out of this extant literature, underlined model was evolved from conventional economic model to modern behavioral model. The conventional economic decision making model (Ng & Tseng, 2008) assumed individuals as rational animals. This model is also named as economic model of crime (Becker, 1968) or enforcement model (Alm et al., 2016; Kirchler et al., 2008), by a group of researchers. Simon (1955) challenged this theory by arguing that rationality is effected by available information, cognitive capacity, and available time for decision making (Simon, 1955). These conventional models are proved to be ineffective because of high cost of implementing enforcement policies, such as audits and penalties (Bruno, 2019). Moreover, these enforcement policies improve tax compliance; however, they do not incentivize the taxation compliance among public (Alm, 2019). Thus, taxation authorities around the world are working to build trustworthiness between authorities and taxpayers to incentivize taxation compliance (Batrancea et al., 2019). Moreover, more than 150 states created and implemented the concept of nudging that may help individuals to make decisions in favor of society Organization for Economic Co-operation and Development (OECD, 2017).

Trust deficit is one of the major hurdles to taxation compliance (Alm, 2019; Nurkholis et al., 2020). In order to deal with trust deficit, fairness perception among citizens about tax authorities needs to be improved (Azmi et al., 2016). Thus, a group of researchers suggested government and officials to develop their policies that incentivize them in order to make favorable decisions, instead of conventional enforcements, command, and control policies (AbdelNabi et al., 2021; Azmi et al., 2016; Silva et al., 2019). A significant number of experimental and review researches analyzed the heuristics and psychological elements. These elements suggested the incorporation of technological reforms while devising tax

policies to improve compliance behavior (Rakhmawati et al., 2020; Tambun & Kopong, 2017).

Automated taxation system is argued to be influential while making judgment about fair taxation by individuals, which in turn, would boost tax compliance (Abbiati et al., 2020). The automated taxation system changed the working of tax collection authorities around the world (Fu et al., 2006). The established information networks helped to boost the efficiency of tax procedures, thus improving the facilitation provided to taxpayers (Tambun & Kopong, 2017). Electronic tax filing by taxpayers is the most important part of electronic taxation system which results into a great time saving cost reduction mechanism (Alm et al., 2016). Thus, electronic taxation or tax technology refers to the whole and efficient use of information technology in the area of taxation.

Pakistan, in the last decade, observed certain technological reforms including IRIS, Online Tax Asaan Application, and E-ketchehry. Despite the benefits, tax authorities face some obstacles towards the implementation of electronic taxation system. Out of these obstacles, public perception about electronic taxation is the important one. After using the electronic system, public may find it useful and user-friendly or otherwise. Additionally, public may be reluctant to spend time and effort to learn new system. Thus, obstacles are there regarding acceptance and use of electronic taxation system, such as lack of support from management, insufficient motivation of user, and built in deficiencies to operate. These issues are more prevalent in developing countries due to inappropriate government policies (Rakhmawati et al., 2020). Therefore, probing the factors that affect the successful use of electronic taxation and their ultimate influence on taxation compliance has become crucial. Moreover, there is a need to assess whether the e-taxation system improved trustworthiness of tax authorities among taxpayers through influencing general fairness perception of citizens about taxation (Wang et al., 2020). Therefore, this study attempted to answer two main research queries. Firstly, it identified the technological factors and their influence on taxation compliance. Secondly, it assessed the influence of e-taxation on the perceived tax fairness.

Different studies were conducted regarding various aspects of taxation including its stakeholders (AbdelNabi et al., 2021; Azmi et al., 2016; Batrancea et al., 2019; Fu et al., 2006; Tambun & Kopong, 2017). A recent research by International Monetary Fund (IMF) reported minimum

threshold for tax-to-GDP ratio as 12. However, Pakistan's Tax to GDP ratio did not cross this figure since last decade. According to Pakistan Economic Survey 2019-20, Tax to GDP ratio for FY19, figured 11.4%, shows a decline to 7.9 %, in FY20-21. However, in comparison, Asia-pacific (24) average is 21.0 and Africa (30) average is 16.6 as Tax to GDP Ratio (OECD, 2021). There is an acute shortage of empirical studies related to the taxation system of Pakistan. Moreover, electronic tax filing is an ignored area of the research and that is evident from the existing literature. Therefore, this study aimed to bridge the gap in literature by investigating the role of tax technology and fairness perceptions in e-filing behavior of the individual taxpayers (especially salaried individuals and self-employed individuals) in the selected part of Pakistan. The current study examined acceptance and attitude of taxpayers towards technological reforms based on Technology Acceptance Model (TAM) proposed by Davis (1989). It considers two important constructs that affect the utilization of new technology for e-filing of tax in the presence of other factors. These factors include perceived usefulness (PU) and perceived ease of use (PEOU) with reference to tax technology for electronic tax filing.

The introduction of this study is followed by four major sections. Literature review comprises empirical studies that indicate recent developments regarding the variables and constructs besides underlined relationships that supported theoretical foundation. Methodology reveals the detailed explanation of research approach, population, sampling technique, and size along with measurement scale and estimation methods. Results and discussion indicates research findings based on statistical inferences. Conclusion section represents concluding remarks, implication of study, and future direction for potential researchers.

Literature Review

Tax compliance is a major policy issue for both developing and developed countries (Kirchler et al., 2008; Silva et al., 2019). Specifically, low-income countries struggle with the widespread tax evasion because of poor tax policies, poor tax administration, and taxpayers' attitude towards taxation. Tax compliance entails the individual willingness to comply with taxation requirements in order to pay taxes, either voluntarily or forcefully. In contrast, the tax noncompliance means failure to fulfill taxation responsibilities (Bobek et al., 2013). Another study suggested that tax compliance is not only the compliance with taxation laws; however, it is

also a commitment to sate' objectives and societal well-being (James & Alley, 2002). Moreover, tax compliance is defined as the discretion of taxable entities. It includes corporations and citizens to behave in accordance with taxation laws, reporting tax base accurately, computing tax liability accurately, and timely filing of returns without enforcement action. It also refers to the willingness of taxable entities to public finance (Kharisma, 2018; Tusubira, 2018). Basically, tax compliance is the achievement of three sequential actions for instance, filing income tax returns, reporting accurately, and paying tax liabilities.

The perception of taxpayers about tax fairness plays a very important role to shape up the tax culture in a state. In turn, this perception is developed through contextual factors. Therefore, the importance of contextual factors of taxpayers to make compliance decisions cannot be ignored (Alm & Torgler, 2011). In other words, it is suggested that general public is more inclined to comply with state taxation laws if they believe taxation system is fair and compliance with taxation requirements is the national duty and right thing to do (Alm & Torgler, 2011; Drogalas et al., 2018).

Perception is narrated as "a process by which individuals organize and interpret their sensory impressions in order to give meaning to their environment" (Robbins, 1992, p. 35). While ethical perception is considered as a relative recognition and awareness of ethical dimension of a certain situation (Wittmer, 2000). As it is a relative measure, therefore the individuals' behavior would vary on the basis of ethical aspect of a certain phenomenon. A person, who does not consider the moral aspect, would employ rational scheme in their decision making instead of moral scheme (Jones, 1991). The current study implied Fairness Heuristic Theory (Bos, 2001) along with the TAM Model (Davis, 1989). Fairness Heuristic Theory argues that fairness perception about some phenomenon helps participants to make decisions. This perception is in turn formulated from large number of contextual factors. In taxation context, fairness perception on tax authorities helps citizens to make compliance decisions. E-taxation system was initially used in USA, where IRS was used to apply for tax refund only. After that, e-taxation system was used by many states, such as, Canada, Australia, India, China, UK, The Netherlands, Germany, France, Ireland, and Malaysia.

In this study, acceptance and attitude of taxpayers towards technological reforms was assessed with the implication of Technology Acceptance Model (TAM) by Davis (1989). Two important constructs were conceptualized that affect the utilization of new technology. These factors include perceived usefulness (PU) and perceived ease of use (PEOU) based on new technology. Perceived usefulness (PU) is defined as the user's perception about the usability of newly introduced technology and expectation that the specific technology would help to improve task performance. Perceived ease of use (PEOU) is explained as the extent to which operators of new technology believe that the adoption of new technology would help to cut down cost in terms of time, money, and efforts. Apart from TAM Model, facilitating conditions is another important factor that affect the acceptance of newly introduced system. Venkatesh et al. (2012) defined facilitating conditions as the degree to which an individual believes that an organization and infrastructure exist to support the use of the system. A study in Kenya found that taxpayers were uncomfortable with online taxation system as compared to old manual system, thus negatively affecting their compliance level (Karuru, 2021). It is observed that if taxpayers evaluate and perceive online system as secure, they trust it and intend to adopt it along with using it without any hesitation (Fu et al., 2006). Therefore, it may be hypothesized that the perception about online taxation system leads towards fairness perception of taxpayers, which in turn leads to compliance.

An e-taxation system is a platform which helps individuals to access services from tax administration through internet. Tax services include tax identification number registration, filing of tax returns, paying against tax liability, and application for tax refunds (Olurankinse & Oladeji, 2018). It is argued that e-taxation system helps to improve taxation compliance, as it improves the smooth taxation process without any physical visit to tax offices. Moreover, e-taxation system is proved to be a secure, easy to use, dependable, and user friendly system and these attributes help to boost taxation compliance. Early researches documented the nexus between attitude towards e-taxation system and level of taxation compliance (Night & Bananuka, 2019). However, an important study indicated the significant impact of perception of taxpayers about ease, usefulness, and security of online tax filing system on the compliance level among citizens (Mwangangi & Memba, 2022). Existing literature enables to propose a

theoretical framework followed by several hypotheses that are placed below.

Figure 1
Proposed Framework
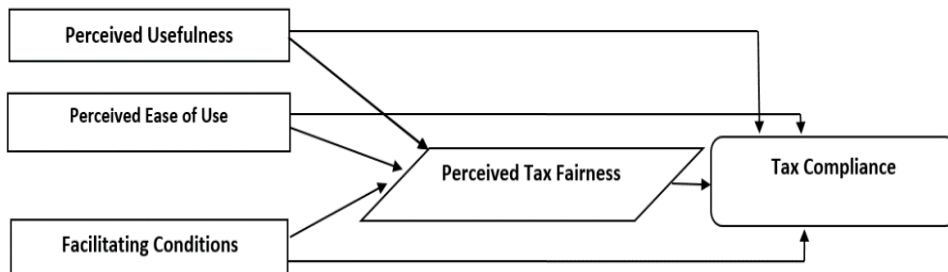
Hypotheses

H_1: Perceived usefulness has significant positive impact on tax compliance.

H_2: Perceived ease of use has significant positive impact on tax compliance.

H_3: Facilitating conditions has significant positive impact on tax compliance.

H_4: Perceived tax fairness significantly mediates the nexus between perceived usefulness and tax compliance.

H_5: Perceived tax fairness significantly mediates the nexus between perceived ease of use and tax compliance.

H_6: Perceived tax fairness significantly mediates the nexus between facilitating conditions and tax compliance.

Methodology

Research Philosophy and Approach

The current study tested the casual association among the concepts. Therefore, the research philosophy adopted in this study is positivism which employs facts and figures related to research enquiry instead of subjective characteristics of human beings (Creswell, 2013). Basically, positivism implies deductive approach which deals with testing well established theories on the basis of empirical data (Sreejesh et al., 2014). Thus, findings

based on this philosophy have better reliability and generalizability (Walliman, 2006). This study enables apply research philosophy and approach under discussion to test the hypotheses by collecting responses from the target audience in the selected part of Pakistan.

Population and Sampling

The population of the current study comprised individual tax filers of Pakistan including salaried and self-employed individuals. Snowball sampling method was used to approach potential respondents. This technique uses connectors and relationships to reach potential respondents (Creswell, 2013). Thus, tax practitioners were used as primary connectors and the participants as secondary connectors to reach potential respondents. The potential respondents were highly reluctant to participate in this study as they were conscious about revealing their tax matters. Therefore, the attitude of respondents resulted into very low response rate of 42.5%, which was consistent with other tax studies (Saad, 2011; Tusubira, 2018). Researcher distributed 400 self-administered questionnaires among individual tax filers in natural setting which was consistent with the sample size of 384 as suggested by Krejcie and Morgan (1970). After excluding incomplete and inappropriate responses, 169 were processed for statistical analysis.

Measurement Scale

Interval scale was employed that specified 5-point likert scale ranging from 1 (strongly disagree) to 5 (Strongly agree). A multi-item instrument was devised in the light of literature by incorporating the local dynamics that is placed in table 1. The questionnaire, employed to collect data comprised two major sections. Section I consisted of items that measured variables under study including Perceived Ease of Use, Perceived usefulness, facilitating conditions, perceived Tax Fairness, and Tax Compliance. Whereas, section II consisted of demographic information, that is, age, Annual income, qualification, and experience of filing tax filers.

Table 1
Measurement of Variables

Variables	Items	Scale Adapted From
Perceived Ease of Use	3	(Fu et al., (2006)
Perceived Usefulness	4	(Fu et al., 2006)

Variables	Items	Scale Adapted From
Facilitating Conditions	3	(Schaupp et al., 2010)
Perceived Tax Fairness	4	(Kim & Leung, 2007)
Tax Compliance	6	(James & Alley, 2009)

Estimation Methods and Statistical Software

Smart PLS (statistical software) is widely used in social sciences and is efficient for the assessment of Structural Equation Modeling (Perveen et al., 2020; Ullman & Bentler, 2003). SEM includes framework which represents causal paths between latent variables. Aligned to this, the paths or causal association between the theoretical latent constructs under study are drawn in the structural models. The structural frameworks are then used to assess the main hypotheses established to probe the research queries. Smart PLS-SEM results are composed of two phases, that is, testing hypothesized relationships and goodness of measures. Coefficient parameter estimates and their significance tested to accept/reject the underlying hypotheses. Goodness of measures was evaluated with the help of Cronbach's Alpha, Hetrotrait-monotrait ratio (HTMT) and Average Variance Extracted (AVE) on the basis of thresholds as suggested by Hair et al. (2014), and Kline (2011).

Results and Discussion

Goodness of measures was basically used to test the reliability and validity of the constructs under study. Motive behind this was to test whether the items of variables are true representatives of variable and measure the concept.

Table 2

Reliability of Scale Items

Variables	Composite Reliability	Cronbach's Alpha
Perceived Usefulness	0.859	0.733
Perceived Ease of Use	0.800	0.789
Facilitating Conditions	0.609	0.606
Perceived Tax Fairness	0.858	0.853
Tax Compliance	0.827	0.805

Table 2 indicates Cronbach's alpha that is used to assess the reliability of the construct. Its value ranges between 0 to 1. However, 0.7 is minimum threshold value (Kline, 2005). In this model, Cronbach's alpha for each variable is higher than 0.7 which represents internal consistency of the measures. Moreover, composite reliability of all constructs carries high degree of internal consistency in comparison to the threshold value, that is, 0.7 except facilitating conditions (Chin et al., 2008; Hair et al., 2014).

Table 3

Hetrotrait-Monotrait (HTMT) Analysis- Discriminant Validity

	Facilitating Conditions	Perceived Tax Fairness	Perceived Ease of Use	Per. Usefulness	Tax Compliance
Facilitating Conditions					
Perceived Tax Fairness	0.666				
Perceived Ease of Use	0.496	0.599			
Perceived Usefulness	0.380	0.230	0.133		
Tax Compliance	0.560	0.406	0.143	0.308	

Hetrotrait-Monotrait Ratio is used to assess Discriminant validity. Above table shows that all values are less than 0.85 threshold value as proposed by Kline (2011).

Table 4

Average Variance Extracted-Convergent Validity

Variables	Average Variance Extracted (AVE)
Perceived Ease of use	0.702
Perceived Usefulness	0.538
Facilitating Conditions	0.561
Perceived Tax Fairness	0.694
Tax Compliance	0.511

Table 4 indicates AVE that is used to assess the convergent validity. The values of AVE for all variables are greater than 0.5, as suggested by Hair et al. (2014).

Table 5

Model Accuracy

	R^2	Adjusted R^2
Perceived Tax Fairness	0.363	0.351
Tax Compliance	0.241	0.223

Table 5 reveals goodness of fit (model accuracy) that is assessed through adjusted R square. Explanatory power of the latent and endogenous variables is explained through numerical value of adjusted R^2. The value of R^2 and adjusted R^2 must be in between 0 and 1. Its value closer to one is the indication of better estimation of path model (Geisser, 1974; Stone, 1974).
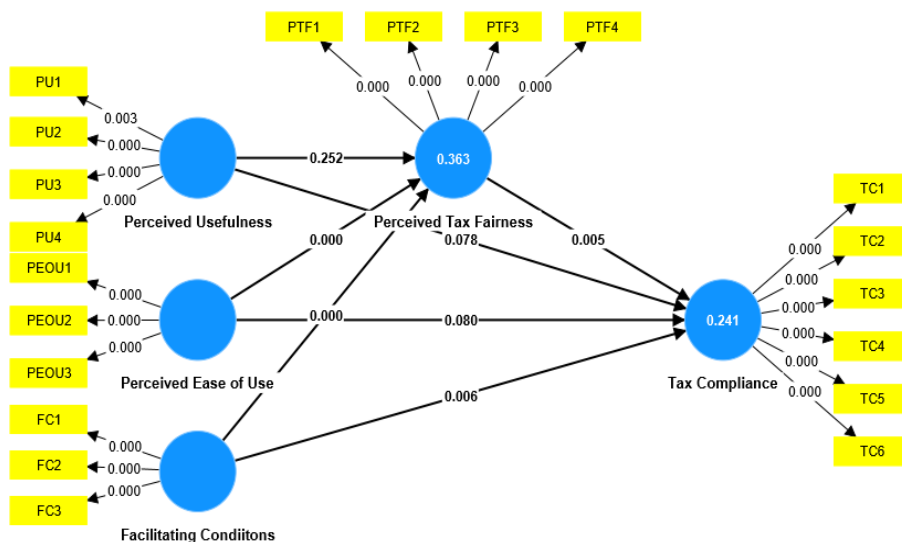
Table 6

Model Fit Assessment

	Saturated Model	Estimated Model
SRMR	0.079	0.079
Chi-Square	1.313	1.313
NFI	0.403	0.403

Table 6 reflects the threshold value for standardized root mean square (SRMR) that is 0.08. The value of SRMR must be less than 0.08 (Hu & Bentler, 1999). This current model under assessment has SRMR value of 0.079 which assures the acceptance of the conceptualized model. Bootstrapping is used to add more accuracy to the estimations. Bootstrapping, a nonparametric approach, results into more precise estimations. In this method, T statistics are generated for both inner and outer model to test the significance. Figure 2 depicted below is the representation of the structural model analyzed through bootstrapping method.

Path analysis diagram represents the structural equation model for this work. Arrows are used to depict hypothesized associations. Path analysis diagram and Table 7 & 8 summarize coefficients magnitudes and their level of significance. The diagram shows that all the path coefficients are significant except the association of Perceived Usefulness and Perceived Tax fairness. Moreover, the association between Perceived Usefulness and Tax Compliance is significant at 10% level of confidence.

Figure 2
Path Evaluation (Bootstrapping)

Table 7
Path Coefficients

	Original Sample (*O*)	Sample Mean (*M*)	Standard Deviation (STDEV)	*t* Statistics (|O/STDEV|)	*p*
Facilitating Conditions → Perceived Tax Fairness	0.328	0.333	0.076	4.306	0.000
Facilitating Conditions → Tax Compliance	0.283	0.283	0.103	2.750	0.006
Perceived Ease of Use → Perceived Tax Fairness	0.376	0.377	0.077	4.907	0.000
Perceived Ease of Use → Tax Compliance	0.141	-0.146	0.081	1.753	0.080
Perceived Tax Fairness → Tax Compliance	0.232	0.224	0.082	2.817	0.005
Perceived Usefulness → Perceived Tax Fairness	0.093	0.097	0.081	1.146	0.252
Perceived Usefulness → Tax Compliance	0.204	0.227	0.116	1.761	0.078

Table 8

Indirect Path Coefficients

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	t Statistics (|O/STDEV|)	p
Perceived Usefulness - → Perceived Tax Fairness → Tax Compliance	0.022	0.024	0.023	0.931	0.352
Perceived Ease of Use - → Perceived Tax Fairness → Tax Compliance	0.087	0.085	0.038	2.289	0.022
Facilitating Conditions → Perceived Tax Fairness → Tax Compliance	0.076	0.074	0.031	2.471	0.013

Table 8 represents the summary statistics of indirect path coefficients. Indirect path coefficients are positive and significant (P Value less than 0.05), except the association of perceived usefulness and tax compliance through perceived tax fairness. Major findings of the study indicate that perceived usefulness shows significant direct influence on Tax Compliance (as shown by direct path coefficients) which supports the hypothesis H_1. Similarly, perceived ease of use shows significant positive influence on Tax Compliance, as represented by direct path coefficients which supports the second hypothesis H_2.

Similarly, facilitating conditions also have significant direct influence on Tax Compliance. Moreover, indirect path coefficients are used to assess the mediating role. The mediating role of Perceived Tax Fairness between independent variables and dependent variables also found significance (through indirect path coefficients). Thus, these indirect path coefficients and their p values helped to accept H5 and H6 hypotheses and reject the fourth H4 hypotheses. Literature also supports these findings (Davis, 1989; Fu et al., 2006).

In a nutshell, statistical findings revealed that the electronic reforms influence the compliance level of individuals considerably (Olurankinse & Oladeji, 2018). Moreover, the perception of taxpayers about usability and simplicity of electronic taxation system are the important factors that influence the successful implementation of e-taxation (Davis, 1989).

However, taxpayers must be facilitated while using e-taxation in terms of training and resources required to use e-taxation (Fu et al., 2006). Additionally, this study explored the direct association of perceived tax fairness with tax compliance. This notion implies that individuals become more inclined towards taxation if they perceive it fair (Azmi et al., 2016). Most importantly, the mediation of perceived tax fairness between e-taxation and tax compliance is proved, as argued by fairness heuristic theory (Cropanzano et al., 2015; Kim & Leung, 2007). Thus, technological reforms help to make system more transparent and trustworthy, influencing the tax compliance in turn (Augustine & Rufus, 2019).

Conclusion

A strong and reliable taxation system plays a very important role to maintain a resilient economy. The citizens' trust in tax authorities leads to a healthy taxation system and tax compliance. Countries around the world are working on the trust paradigm to sustain public trust. Perception of taxpayers about tax fairness is very important to shape up the tax culture in a state. In turn, this perception is developed through contextual factors. The current study concluded that technological factors influence tax compliance. Moreover, fairness perception helps to strengthen trust between parties, which further helps them to make favorable decisions. However, the relationship between technological reforms and fairness perception is still questionable. This is because two hypotheses are accepted out of three hypotheses which represents the association between tax technology and perceived tax fairness. However, this study found strong association between fairness perception and tax compliance, consistent with the literature. A number of studies have argued that if taxpayers consider taxation system unfair, they become inclined towards tax evasion. In contrast, a fair taxation system implemented by government helps to improve taxation compliance (Azmi et al., 2016; Feld & Frey, 2007; Verboon & Goslinga, 2009). This relationship is also supported by political legitimacy theory (Dowling & Pfeffer, 1975). Legitimacy is defined as the trust or belief in taxation authorities, government, and regulatory bodies that these entities work for the welfare of the society. Thus, compliance level is sensitive to the level of trust that the citizens have in state institutions (Kirchler et al., 2008). So, it may be conceptualized that tax compliance must be higher in the environment of mutual trust between citizens and

government as compared to the environment of trust deficit (Augustine & Enyi, 2020).

Implications

The findings could help tax administrators to cope with the issue of trust deficit between citizens and tax authorities prevailing in Pakistan by employing services and trust paradigm (Silva et al., 2019). Technological tax reforms, such as online tax services and procedures must be introduced to improve transparency and trustworthiness of the taxation system which, in turn, would motivate them to comply with taxation. Technological reforms facilitate the taxpayers and make tax procedures simpler and more convenient. The assessment of the association of electronic taxation and taxation compliance, especially the mediation of perceived tax fairness, is the contribution of this study. Moreover, the data was collected from individual taxpayers. However, tax consultants may also be interviewed to have a better understanding of the topic.

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